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Audio

FULL DETAILS AND TRANSCRIPT

Acceleration for Mathematically Gifted Students

Longfellow Middle School, Virginia • June 2008

Topic: National Math Panel: Critical Foundations for Algebra

Practice: Mastery Framework

Highlights

- How students are identified for gifted program
- Content of advanced math courses for 7th and 8th grade
- Follow up high school courses for advanced middle school students
- Definitions of acceleration and intellectual enrichment
- Motivation for and characteristics of mathematically gifted students
- Role of the teacher

About the Site

Longfellow Middle School

Falls Church, VA

Demographics

66% White

19% Asian

7% Hispanic

5% Other
3% Black
7% Free or Reduced-Price Lunch
6% English Language Learners
11% Special Education

Longfellow Middle School has a reputation of academic excellence, recognized nationally in the fields of mathematics and instrumental music, and named by Virginia's Governor as in the top 5% of the state's schools. Features of how mathematics is taught at Longfellow:

- Rigorous requirements in all mathematics courses,
- Leveled courses include at grade 7: Math, Honors and Algebra I; at grade 8: Algebra Readiness, Algebra I Honors, Geometry Honors,
- Math for Success after-school program for extra support for all students and Power Math semester-long course for small group of students to support them in regular math courses,
- Computerized pre-algebra modules used to help individual skill practice based on student needs,
- Routine use of peer explanation of approaches to problems, and
- Courses for acceleration of gifted students in mathematics.

Full Transcript

I am Vern Williams and I teach 7th and 8th graders at Longfellow Middle School.

The students are identified for inclusion in the gifted program—the Gifted Center program—by recommendations, teachers using a teacher rating scale, and test data. We support the findings from the National Math Panel concerning the acceleration of gifted students by offering very advanced courses for the middle school age group. For instance, we offer our 7th graders, not only an algebra course, but an algebra course enriched with topics from group theory and set theory, sequences and series, and mathematical logic, as well as other advanced topics. In our 8th grade, we not only offer Honors Geometry, which is a year of proof-based geometry, but we also offer a course titled Geometry Problem Solving, where we do a course of proof-based geometry course and we also enrich it with problems selected from various high school mathematics contests and mathematical journals. During certain years we even have individual students taking courses such as Pre-Calculus or AP Statistics.

After the students have taken courses at Longfellow in our gifted program, we would hope that in 9th grade they are offered very enriched versions of Algebra II and Pre-Calculus; and that theory be covered in those courses, and that the students also continue to do mathematics contests which they start to do at Longfellow. We also would hope that those students would go at least to Calculus BC and hopefully

beyond. The services for gifted, in our math program at Longfellow, we tend to stress both acceleration and enrichment. But our enrichment we consider very quality enrichment, it is very intellectual enrichment. We don't consider enrichment doing low-level projects involving low-level content, so when we mention enrichment we would take a subject and have the students discover and do very, very involved niches of that particular subject area. The combination of both has worked for us. As far as attitudes and motivation of mathematically gifted students, I have found, in my 35 plus years of teaching them, that they want challenging, new, and difficult content. That they tend to be patient when they are solving problems, they refuse for the most part to give up on a problem, and that they find mathematics to be interesting not just for application purposes but the math itself. I think with those particular students, that's where you need to go in-depth and to do more than just surface material with them.

As far as instructional approaches are concerned, I make sure that there is ample time for students to explain their work both to me and to the other students. When they do that, by being grouped together, students find that there are many ways to approach a problem, many ways to solve a problem. Some ways are just absolutely interesting. They may not be the most efficient way, but it might be the way that no one has ever thought of. So we definitely have students explain their work quite a bit. I explain problems and content to the students, so there are times when I am at the board explaining material. And when the students have an excellent background on specified content, there are times when I might give them problems, even remotely related to the content, that I would expect them to conquer on their own without my help; and I think this is one thing that gifted students thrive on. They don't want to be told every detail. At times they want to come up with ways of doing a problem totally on their own. Truly mathematically gifted students want rigorous, new, and challenging content; and I think some people interpret mathematically-gifted as projects and fun activities, and these students want so much more than that.